DOCUMENT RESUME

ED 332 825 PS 019 630

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TITLE A Longitudinal Study of Children's Social Adjustment during Elementary School.
PUB DATE Apr 91
NOTE 25p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (Seattle, WA, April 18-20, 1991).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Antisocial Behavior; Comparative Analysis; Elementary Education; *Elementary School Students; *Identification; Interpersonal Competence; Kindergarten Children; Longitudinal Studies; *Predictor Variables; Prosocial Behavior; *Social Adjustment; *Social Development; *Student Characteristics; Student Improvement

ABSTRACT

A 7-year, longitudinal study of children's social development from kindergarten through sixth grade was designed to identify unusually prosocial children and characteristics that differentiated them from average and antisocial peers. Another objective was to identify functional socioemotional predictors of changes in children's social adjustment. Data were collected as part of the evaluation of a school-based intervention program designed to enhance students' prosocial development. Subjects were 303 students, primarily Caucasian and middle-class, from 3 elementary schools. A wide range of variables were assessed, many of them repeatedly, by means of a variety of measures and procedures. As expected, children in prosocial, average, and antisocial groups were found to differ significantly with respect to a large number of measures of social attitudes and values, interpersonal behavior, peer acceptance, school-related attitudes and values, and academic achievement. Curiously, no significant group differences were found for measures of social skill except for perceived social competence. Most differences were found when children were in middle and upper elementary grades. Prosocial children of both sexes, and average girls, improved in adjustment over time, but average boys declined in adjustment. In contrast to the relative stability of antisocial boys, antisocial girls greatly declined in adjustment. (RH)

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A Longitudinal Study of Children's Social Adjustment During Elementary School

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PS 019630

Paper presented at the biennial meeting of the Society for Research in Child Development, April 1991, Seattle, WA. This research was supported by a grant from the William and Flora Hewlett Foundation.

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It seems beyond doubt that positive social relationships with peers are necessary for healthy development (Hartup, 1989). Children who are disliked and rejected by their peers are denied many opportunities for the kinds of social experiences that facilitate positive socioemotional development and constructive socialization. Rejection by peers has consistently been found to be associated with aggression and other antisocial behaviors (e.g., Dodge, 1983), as well as with academic problems (e.g., Green, Vosk, Forehand, & Beck, 1981), and there is now considerable empirical evidence that poor peer relations in childhood is associated with a variety of adjustment problems (e.g., school failure, delinquency) in adolescence and early adulthood (Parker & Asher, 1987).

Although we have learned a great deal about the characteristics of aggressive/rejected children and the implications of these childhood adjustment problems for later adaptive functioning, much less is known about the characteristics of children who are particularly well-adjusted, or about the relationships between adjustment and other aspects of socioemotional development (e.g., self-concept, moral reasoning, social attitudes, empathy). One purpose of the present research, then, was to identify children who were unusually "prosocial," and to examine the characteristics that distinguished them from both "average" children and, particularly, their distinctively poorly-adjusted or "antisocial" peers. Similarly, while it appears that social rejection in childhood is a relatively stable condition (e.g., Coie & Dodge, 1983), little is known about the factors that are associated with improvements (or declines) in social adjustment over time. Consequently, a second purpose of this research was to identify aspects of socioemotional functioning that are predictive of changes in social adjustment.

The findings described in this paper are from a seven-year longitudinal study of children's social development during the elementary school years (kindergarten through sixth grade). The data were collected as part of the evaluation of a school-based intervention program designed to enhance children's prosocial development (see Battistich et al., 1991). Subjects were 303 students (140 girls, 163 boys), primarily Caucasian and middle-class, from three elementary schools, who served as a comparison group for students who received the intervention. A wide range of variables were assessed, many of them repeatedly, using a variety of measures and procedures (see Table 2).

Classification by Adjustment Status

Teacher ratings of students' interpersonal behavior were used as the primary measures of social adjustment. Students were rated by their teachers each year from kindergarten through second grade, and again in fourth grade, on the extent to which they were characterized by each of 24 behavioral descriptors. Principal components analyses indicated that eight of these ratings assessed *prosocial behavior* (e.g., "treats others fairly," "cooperative, works well with others," "helpful to others;" Cronbach's alpha = .94), and five assessed *antisocial behavior* (e.g., "hostile, aggressive," "misbehaves, violates class rules," "quick to take offense;" alpha = .89). Students' scores on each of these two dimensions were averaged and then standardized within grade and sex.

The rating scores were used to assign students to adjustment groups through a two-stage procedure. First, *k*-means cluster analysis was used to classify the subsample of students who were rated by their teachers on each of the four occasions from kindergarten through fourth grade (n = 81; 38 girls, 43 boys; 27% of the total sample) into three groups that most closely matched the following specifications: (a) those who were distinctively well-adjusted or "*prosocial*" (i.e., consistently had rating scores at least one standard deviation higher than their same-sex peers for prosocial behavior, and rating scores at least one standard deviation lower than their same-sex peers for antisocial behavior); (b) those who were distinctively poorly-adjusted or "*antisocial*" (i.e., had a pattern of rating scores opposite that of prosocial children); and (c) those who were

"*average*" in social adjustment (i.e., consistently had rating scores approximately at the sample mean for their same-sex peers for both prosocial and antisocial behavior).

The remaining students (i.e., those who were rated on fewer than four occasions; $n = 222$; 102 girls, 120 boys) were then assigned to these three groups through an iterative process. Discriminant analysis was used to compute weighted discriminant functions from the ratings of prosocial and antisocial behavior for the 81 students whose group membership was "known." These discriminant functions were then used to compute coefficients to predict group membership for the remaining students, with the sample mean substituted for missing data. Students were classified into groups based on these estimated probabilities, and the entire process was repeated until group membership stabilized (i.e., no student was predicted to be in a group other than that to which he/she was previously assigned). Stability was achieved after three iterations. The final classification is shown in Table 1.

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Table 1 Here

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Overall, 70% of the children were classified as "average," 13% as "antisocial" and 17% as "prosocial." Proportionately, boys were slightly more likely to be classified as antisocial or prosocial, and girls were slightly more likely to be classified as average, but the differences in group membership by sex were quite small (2-3%). It is worth noting that the size of the antisocial group approximates the proportion of students typically classified as "rejected" on the basis of sociometric criteria (e.g., Coie, Dodge, & Coppotelli, 1982; Ladd, 1990).

Also as indicated in Table 1, the final classification closely approximated the criteria for group membership specified in the initial cluster analysis, although the average ratings of antisocial and prosocial behavior for the antisocial group were somewhat more extreme, and those for the prosocial group somewhat less extreme, than the specified criteria.

Adjustment Group Differences in Social and Academic Functioning

Our first set of analyses was conducted to identify differences between antisocial, prosocial, and average children in their social, moral, and school-related attitudes, values, skills, and behavior. A brief description of the variables assessed in each of these domains is presented in Table 2. More specific information about particular measures is presented in Deer, Solomon, Watson, and Solomon (1988), Battistich et al. (1989), and Battistich et al. (under review).

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Table 2 Here

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The data were analyzed through 3 (adjustment group) x 2 (sex) multivariate and univariate analyses of variance, with planned contrasts between prosocial and antisocial children. Separate analyses were conducted at each grade level and within each domain of measures.

Observed differences between antisocial, average, and prosocial children by domain and grade are summarized in Table 3. The multivariate effect for adjustment group was significant ($p < .10$) at each grade level except second grade. Overall, as indicated in Table 3, the main effect for adjustment group was statistically significant ($p < .05$) for 29% of the comparisons, and the planned contrasts indicated that prosocial and antisocial children differed significantly ($p < .10$) on 34% of the comparisons. Although boys and girls differed significantly on many of the measures, with few exceptions (see below) there were no significant Sex x Adjustment Group interactions.

Table 3 Here

As would be expected, prosocial children scored higher than antisocial children on measures of prosocial attitudes and values (e.g., empathy, concern for others, democratic values) and prosocial behavior (e.g., donating behavior, peer judgments of prosocial behavior). The differences between antisocial, average, and prosocial children in empathy and commitment to democratic values are illustrated in Figures 1 and 2, respectively. Prosocial children also scored higher than antisocial children on measures of self-esteem and intrinsic motivation for prosocial behavior, and lower than antisocial children on competitiveness and peer judgements of negative behavior. Average children generally had intermediate scores on these measures, and did not differ significantly from either prosocial or antisocial children. Curiously, although prosocial children were significantly higher than antisocial children in self-perceived social competence, these two groups did not differ significantly on any other measure of social skills.

Figures 1 & 2 Here

As also would be expected, prosocial children were more accepted by their peers than were antisocial children, and were significantly less lonely then either average or antisocial children. These differences are shown in Figures 3 and 4, respectively. Prosocial children were nominated as preferred interaction partners by significantly more of their classmates in third grade, and were named by significantly more of their classmates as "most liked" in fifth grade.

Figures 3 & 4 Here

Finally, prosocial and antisocial children differed significantly in school-related attitudes and values, and in academic performance. Prosocial children liked school more than antisocial children (see Figure 5), scored higher in achievement motivation and intrinsic motivation for academic activities, and performed better than antisocial children on achievement tests (see Figure 6). Once again, average children generally had intermediate scores on these measures and did not differ significantly from either prosocial or antisocial children (although they scored significantly higher than antisocial children in achievement motivation and on standardized achievement tests).

Figures 5 & 6 Here

The data in Table 3 also indicate that the differences between antisocial, average, and prosocial children in social and academic functioning increased with age. In fact, in the early elementary grades (kindergarten through second grade), antisocial children often scored higher than average children on the measures of social attitudes, values, and skills, and occasionally scored higher than prosocial children on these measures. Consistent differences in social and academic functioning favoring average and prosocial children generally only began to emerge in third grade, and were most prevalent in fourth through sixth grades.

Analyses also suggested that some of the differences between antisocial, average, and prosocial children in the early elementary grades differed for boys and girls. Specifically, the

multivariate Adjustment Group x Sex interaction was significant in first grade ($p < .02$). Univariate analyses indicated that whereas antisocial girls generally scored lower that average and prosocial girls on the measures, antisocial boys often scored *higher* than average and prosocial boys.

Changes in Social Adjustment from Early to Middle Elementary Grades

A second set of analyses was undertaken to investigate the stability of children's social adjustment between the early and middle elementary grades, and the extent to which measures of children's social functioning were predictive of changes in adjustment. Continuous (rather than categorical) measures of adjustment were computed for each child by averaging his/her ratings for prosocial and (reflected) antisocial behavior at each grade level (K, 1, 2, & 4), and then standardizing ($M = 50$, $SD = 10$) the scores within sex. A measure of change in adjustment was then computed for the 179 children (78 girls, 101 boys; 59% of the total sample) who were rated both in kindergarten or first grade and again in fourth grade by subtracting the child's initial adjustment score from his/her final adjustment score.

Overall, children's social adjustment was moderately stable from the early to the middle elementary grades ($r = .32$, $p < .001$). However, stability was considerably greater among boys ($r = .42$, $p < .001$) than among girls ($r = .18$, $p < .07$). Moreover, although the classification procedures should have maximized overall stability (i.e., consistency) in adjustment scores over time, a 3 (adjustment group) x 2 (sex) analysis of variance indicated that change in adjustment varied by the Adjustment Group x Sex interaction ($p < .05$). This interaction is illustrated in Figure 7.

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Figure 7 Here
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As shown in Figure 7, prosocial boys and prosocial girls both tended to improve in adjustment between the early and middle elementary grades (Ms = 2.32, 2.13, respectively). Changes in adjustment among both average and antisocial children, however, varied by sex. Average girls tended to improve in adjustment over time ($M = 2.38$), but average boys tended to show poorer adjustment over time ($M = -3.52$). On the other hand, antisocial girls showed the greatest change in adjustment of any group, declining by almost half a standard deviation ($M = -4.82$), whereas antisocial boys were the most stable in adjustment of any group ($M = .37$).

Given these substantial sex differences, relationships between social functioning and change in adjustment were examined separately for girls and boys. Table 4 summarizes the findings from multiple regression analyses, predicting change in adjustment on the basis of kindergarten through third grade measures of social attitudes and values, social skills, and peer acceptance. For both girls and boys, measures of social attitudes and values were entered first, followed by measures of social skills, with measures of peer acceptance (grade 3 only) entered last.

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Table 4 Here
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Overall, changes in adjustment were predicted about equally well for girls and boys (Rs = .61, .58, respectively), with the measures of social functioning accounting for somewhat over one-third of the variance in adjustment change scores. The relative contribution of particular domains of variables, however, differed for boys and girls. Measures of social attitudes and values accounted

for much more of the variance in adjustment change scores for girls than for boys (R^2s = .31, .14, respectively). On the other hand, measures of social skills were significant predictors of change in adjustment among boys but not among girls (R^2s = .16, .06, respectively), as were measures of interpersonal behavior (R^2s = .04, .01, respectively). Measures of peer acceptance, which were entered last into the regression equations, did not contribute to prediction of change among either boys or girls.

Although the overall level of prediction was good, the pattern of relationships was quite complex and often the opposite of what would be expected (e.g., change in adjustment was negatively correlated with level of moral reasoning in kindergarten, and positively correlated with competitiveness in third grade). Most of the significant predictors of change were unique within sex (e.g., empathy). Of those variables that were common predictors, most had a different relationship among girls and boys. Social understanding in kindergarten, for example, was positively correlated with change in adjustment among girls, but negatively correlated with change in adjustment among boys. Conflict resolution, on the other hand, was positively correlated with change in adjustment for both boys and girls, but at different grade levels (kindergarten for girls, second grade for boys).

Discussion

One purpose of this research was to investigate the differences between prosocial, average, and antisocial children in socioemotional and academic functioning. As expected, children in these three groups were found to differ significantly with respect to a large number of measures of social attitudes and values, interpersonal behavior, peer acceptance, school-related attitudes and values, and academic achievement. Curiously, however, with the exception of perceived social competence, no significant group differences were found for measures of social skill (although antisocial children generally had the lowest scores, and prosocial children the highest scores on these measures).

Although some significant differences were observed at all grade levels from kindergarten through sixth grade, most of the differences were found when children were in the middle and upper elementary grades (i.e., third through sixth grades). This pattern of results may partly be related to methodological differences—all of the measures assessed in kindergarten through second grades were derived from individual interviews, while many of the measures in third through sixth grades were assessed through group-administered questionnaires, suggesting that social desirability or other self-presentation biases may account for many of the observed differences between groups. However, there are at least two reasons why this does not seem especially likely. First, increasing differentiation with age was observed for variables that were *only* assessed by questionnaire (e.g., competitiveness, self-esteem, democratic values, liking for school). Second, the differences between groups were not restricted to measures assessed through questionnaires, but also included acceptance to peers (sociometric choices), peer judgments of interpersonal behavior, and standardized test scores. Thus, the pattern of results suggests that antisocial, average, and prosocial children do become increasingly differentiated in their social and academic functioning with increasing age.

A number of the differences between antisocial, average, and prosocial children found in this study are reminiscent of differences reported in the literature between children classified as "rejected," "average," or "popular" on the basis of sociometric nominations. For example, these sociometric groups have been found to differ in antisocial behavior (Coie et al., 1982), loneliness (Asher & Wheeler, 1985), and academic performance (Green et al., 1981). However, while we certainly would expect some similarities in the characteristics of children classified on the basis of sociometric criteria and those classified on the basis of their social behavior, particularly between

"antisocial" and "rejected" children, it is clear that the classification as "prosocial" in the present study does not correspond to a sociometric status of "popular." By definition, popular children differ significantly from average children on sociometric indices of peer acceptance. Prosocial children in the present study were not significantly higher than average children in sociometric indices of peer acceptance at either third or fifth grade (nor did they see themselves as being significantly more popular than either antisocial or average children). However, they were nominated by significantly more of their classmates as engaging in prosocial behavior than average children. Thus, as noted by Parker & Asher (1987), sociometric indices of peer acceptance and assessments of social behavior are qualitatively distinct types of measures. Although classifications of social adjustment based on the two kinds of measures are likely to produce partially overlapping groups, they clearly are not interchangeable

The findings were disappointing with respect to identifying variables that were predictive of changes in adjustment over time. Although roughly one-third of the variance in change scores for both boys and girls was accounted for in the multiple regression analyses, the pattern of relationships differed greatly by sex and was not readily interpretable for either boys or girls. Perhaps the most intriguing findings concerning change were the different patterns of change in adjustment observed for girls and boys in the three adjustment groups (Figure 7). Prosocial children of both sexes and average girls all improved in adjustment over time, but average boys declined in adjustment over time. Most striking was the large decline in adjustment observed for antisocial girls, compared to the relative stability of antisocial boys. Although we were not able to explain these differences in the present study, the different developmental "trajectories" of antisocial and average boys and girls clearly warrants additional study.

References

Battistich, V., Schaps, E., Solomon, D., & Watson, M. (1991). The role of the elementary school in prosocial development. In H. E. Fitzgerald, B. M. Lester, & M. W. Yogman (Eds.), *Theory and research in behavioral pediatrics* (Vol. 5). New York: Plenum.

Battistich, V., Solomon, D., Delucchi, K., Watson, M., & Schaps, E. (under review). Effects of a school-based program to enhance prosocial development on children's peer relations and social adjustment. *Child Development.*

Battistich, V., Solomon, D., Watson, M., Solomon, J., & Schaps, E. (1989). Effects of an elementary school program to enhance prosocial behavior on children's cognitive-social problem-solving skills and strategies. *Journal of Applied Developmental Psychology, **10**,* 147-169.

Coie, J. D., & Dodge, K. A. (1983). Continuities and changes in children's social status: A five-year longitudinal study. *Merrill-Palmer Quarterly, **29**,* 261-282.

Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A cross-age perspective. *Developmental Psychology, **18**,* 557-570.

Deer, J., Solomon, J., Watson, M., & Solomon, D. (1988). Assessment of children's motives, attitudes and perceptions. *Moral Education Forum, **13*** (4), 18-34.

Dodge, K. A. (1983). Behavioral antecedents of peer social status. *Child Development, **54**,* 1386-1399.

Green, K. D., Vosk, R., Forehand, R., & Beck, S. J. (1981). An examination of the differences between sociometrically-identified accepted, rejected, and neglected children. *Child Study Journal, **11***, 117-124.

Hartup, W. W. (1989). Social relationships and their developmental significance. *American Psychologist, **44***, 120-126.

Ladd, G. W. (1990). Having friends, keeping friends, making friends, and being liked by peers in the classroom: Predictors of children's early school adjustment? *Child Development, **61**,* 1081-1100.

Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: Are low-accepted children at risk? *Psychological Bulletin, **102**,* 357-389.

Table 1
Description of Adjustment Groups

	Group		
	Antisocial	Average	Prosocial
Number of Students			
Female	16	102	22
Male	23	111	20
Total	39	213	51
Prosocial Behavior			
Raw Score[a]	2.20	3.12	4.04
Standard Score	-1.23	-.19	.92
Antisocial Behavior			
Raw Score[a]	3.86	2.67	1.76
Standard Score	1.29	.10	-.86

[a]Range = 1 - 5

Table 2
Measures

Measure	Source	Grades	Description
Sociomoral Attitudes and Values			
Social Desirability	Interview	K, 2, 4	The number of socially desirable responses given across a set of eight items adapted from Crandall et al (1965). Higher scores indicate a larger number of socially desirable responses.
Value on Helping	Interview	K, 2, 4	The child's responses to five hypothetical situations (similar to those used by Eisenberg -Berg & Hand, 1979) that pose a conflict between helping another and self-interest (e.g., helping someone who is injured when it means that you will miss a birthday party).Higher scores indicate a greater tendency to provide help at cost to the self.
Acknowledge Transgressions	Interview	K, 2, 4	The child's awareness of the moral wrongness of three hypothetical situations involving a transgression (e.g., stealing a friend's toy) on the part of a hypothetical protagonist. Higher scores indicate greater acknowledgement of the wrongness of the acts.
Response to Transgressions	Interview	K, 2, 4	The child's beliefs about how the protagonist would respond in each of the above situations. High scores indicate a greater tendency to engage in reparation, whereas low scores indicate a tendency to conceal one's involvement in the transgression.
Prosocial Reasoning	Interview	K, 2, 4	The child's level of reasoning about the prosocial dilemmas posed by the Value on Helping situations, scored according to criteria suggested by Eisenberg-Berg (1979). High scores indicate reasoning based on internalized values and related affect.
Moral Reasoning	Interview	K, 2, 4	The child's level of reasoning about the moral dilemmas posed by the Transgression situations, scored according to criteria suggested by Eisenberg-Berg (1979). High scores indicate reasoning based on internalized values and related affect.
Empathy	Interview & Questionnaire	1, 3, 4	The child's responses to a set of 16 questions, adapted from Bryant (1982), concerning emotional responses to another's positive or negative experiences (e.g., it makes me sad to see a girl who can't find anyone to play with; it makes me happy when my friend gets a good grade). Higher scores indicate greater emotional responsiveness to the experiences of others.

Table 2 (continued)

Measure	Source	Grades	Description
Prosocial Self-Concept	Interview	1,3	The extent to which the child indicates that prosocial characteristics (e.g., being good at helping others) are important to his/her ideal self-concept, relative to nonprosocial characteristics (e.g., being good at games and sports), by sorting the set of characteristics into categories varying in importance. Higher scores indicate greater relative importance of prosocial characteristics.
Social Distance	Interview	1	A social distance measure, adapted from Duke and Nowicki (1972), in which the child indicates how close he/she would allow hypothetical characters (e.g., someone who has a physical disability, someone who hits others, someone who is really smart) to approach him/her. High scores indicate greater acceptance (i.e., closer proximity) of others. Separate scores are computed for distance from socially rejected (e.g., handicapped, overweight) and negative (e.g., aggressive) targets
Self-Esteem	Questionnaire	3, 4	(e.g., "I like myself just the way I am; I think I am easy to like;" 14 items, alpha = .87).
Concern for Others	Questionnaire	3, 4, 5	(e.g., "I think that everybody has enough problems of their own without worrying about other peoples' problems [reflected];" 6 items, alpha = .67)
Competitiveness	Questionnaire	4	(e.g., "I'll do whatever I have to do to win; I get upset when someone does better than me;" 11 items, alpha = .80)
Democratic Values	Questionnaire	3, 4	(assertion responsibility, equality of participation and representation, and willingness to compromise; 14 items, alpha = .63)
Positive Orientation to Groups	Questionnaire	3	(e.g., "I really like working in groups; it makes you feel good to work in a group;" 5 items, alpha = .74)
Intrinsic Prosocial Motivation	Interview & Questionnaire	4, 5, 6	Similar to measures developed by Connell & Ryan (1985); scored as the proportion of intrinsic reasons to total reasons given for performing prosocial behaviors.
Extrinsic, Introjected, and Identified Prosocial Motivation	Questionnaire	6	(Connell & Ryan, 1985)
Loneliness/ Social Dissatisfaction	Questionnaire	6	(Asher, Hymel, & Renshaw, 1984)
Social Anxiety	Questionnaire	6	(LaGreca, Dandes, Wick, Shaw, & Stone, 1988)

Table 2 (continued)

Measure	Source	Grades	Description
Fantasy-Empathy	Questionnaire	6	(Davis, 1980)
Perspective-Taking	Questionnaire	6	(Davis, 1980)
Empathic Concern	Questionnaire	6	(Davis, 1980)
Personal Distress	Questionnaire	6	(Davis, 1980)
Perceptual Benevolence	Questionnaire	3	Similar to a measure used by Dodge, Murphy, and Buchsbaum (1984) to assess the tendency to attribute malevolent or benevolent motives to others in situations where the social cues are ambiguous. (7 items, alpha = .56)
Self-Monitoring	Questionnaire	5	Measure of the tendency to monitor one's self-presentation and expressive behavior, developed by Graziano, Leone, Musser, and Lautenschlager (1987).
Rivalry	Questionnaire	5	Distribution choice card measure developed by Knight and Kagan, 1977). High scores indicate the tendency to maximize the difference between one's own outcomes and those of others.
Social Skills			
Conflict Resolution	Interview	K, 2, 4	The child's responses to three hypothetical situations involving an interpersonal conflict (e.g., you are playing with a new calculator and when you turn away for a moment another child takes the calculator and beings to play with it). Responses are scores for (a) how the child attempts to resolve the confict (e.g., appeal to an authority, aggression, compromise), (b) which of the parties are favored by the resolution (self, other, or both), and (c) whose needs are considered when trying to resolve the conflict (own, other's, or both). Higher scores indicate more prosocial resolution strategies (e.g., discussion, sharing) and more consideration of the other as well as the self.
Social Understanding	Interview	K, 2, 4, 5	Derived from the child's responses to questions concerning his/her understanding of videotaped segments from the film Our Vines Have Tender Grapes (adapted from Flapan, 1968). Higher scores indicate a more complex and sophisticated understanding of social interactions, including greater sensitivity to and understanding of various characters' points-of-view and the interpretation of characters' actions in terms of more subtle and accurate (as opposed to superficial and/or inaccurate) psychological motives. A different measure, based on responses to written stories, was used at 5th grade.

Table 2 (continued)

Measure	Source	Grades	Description
Social problem-solving	Interview	1, 3	(adapted from Elias (1978), based on two situations: (a) a child who would like to play with a puppet that another child is using; (b) a child who would like to be involved with a group of other children who are playing a game.)
Interpersonal sensitivity			The degree to which the child is able to understand each of the two situations described above. Higher scores indicate that the child: (a) did not require extensive probing by the interviewer in order to comprehend the situations; and (b) mentioned the feelings of the characters involved when describing the situation.
Problem resolution			The child's approach to resolving the social problem, including the type of strategy used (e.g., physical aggression, seeking help from an adult, asking to share/be included) and the expected outcome. Higher scores indicate more adequate strategies (e.g., sharing, talking about the problem), a belief that the situation will be resolved satisfactorily, and that the outcome will be the result of personal initiative, rather than external events).
Obstacle resolution			The child's approach to solving the problem when an obstacle to success is posed by the interviewer. Scored the same as "Problem resolution."
Means-ends thinking			The complexity and sophistication with which the child attempts to resolve the problem situation. Higher scores indicate: (a) suggesting a number of discrete steps toward resolution; (b) anticipating outcomes of strategies and possible obstacles to success; and (c) proposing several alternative strategies for resolution.
PerceivedSocial Competence	Questionnaire	4, 5	(e.g., "I usually know when people need help and what kind of help to give; I know how to disagree without starting a fight or argument;" 17 items, alpha = .84)
Interpersonal Behavior			
HelpingBehavior	Interview	K	The rapidity and thoroughness with which the child helps the interviewer when he/she "accidently" drops a box of paper clips on the floor. Higher scores indicate faster and more extensive helping.

Table 2 (continued)

Measure	Source	Grades	Description
Donating Behavior	Interview	K, 2, 4	The child's response to an opportunity to anonymously donate some of the stickers received by him/her for participating in the interview to children in a nursery school. Scored 0 if the child did not donate any stickers, and 1 of the child donated one or more stickers
Prosocial Behavior	Sociometric	5	Number of classmates nominating child as performing prosocial behaviors, proportional to maximum possible nominations.
Negative Behavior	Sociometric	5	Number of classmates nominating child as performing agonistic and other negative behaviors, proportional to maximum possible nominations.
Competitive Behavior	Sociometric	5	Number of classmates nominating child as being competitive, proportional to maximum possible nominations.
Assertive Behavior	Sociometric	5	Number of classmates nominating child as being assertive, proportional to maximum possible nominations.
Withdrawn Behavior	Sociometric	5	Number of classmates nominating child as being socially isolated/withdrawn, proportional to maximum possible nominations.
Peer Acceptance			
Nominations Received	Sociometric	3	The number of classmates that nominated the child as a preferred partner in any of five situations, including both academic (e.g., "work with on a class project") and nonacademic (e.g., "be on your sports team"). Scored as a proportion of the maximum possible, given class size.
Roles Nominated For	Sociometric	3	The number of roles (situations), as described above, a child was nominated for.
Friendship Nominations Received	Sociometric	5	The number of classmates that nominated the child as "liked the most." Scored as a proportion of the maximum possible, given class size.
Friendship Nominations Made	Sociometric	5	The number of classmates nominated as "most liked," scored as a proportion of the maximum possible,
Reciprocated Nominations	Sociometric	3, 5	The number of nominations that were reciprocated, proportional to the maximum number possible.
Perceived Popularity	Questionnaire	5	(e.g., "I think most other children like me; other children like to play with me;" 6 items, alpha = .77)
School-Related Attitides, Values and Achievement			

Table 2 (continued)

Measure	Source	Grades	Description
Liking for School	Questionnaire	4, 5, 6	(e.g., "I like my school; I would be very sad if I had to go to a different school"; 7 items, alpha = .75)
Achievement Motivation	Questionnaire	4	Adapted from Weiner and Kukla (1970) and Solomon and Kendall (1979) (e.g., "In school I try very hard to get good grades; I like a puzzle that takes hard work to solve;" 16 items, alpha = .69)
Extrinsic, Introjected, and Identified Academic Motivation	Questionnaire	6	(Connell & Ryan, 1985)
Intrinsic Academic Motivation	Questionnaire	5, 6	Similar to measures developed by Connell & Ryan (1985); scored as the proportion of intrinsic reasons to total reasons given for performing academic behaviors.
Enjoy Helping Others Learn	Questionnaire	3, 4, 5	(e.g., "it makes me feel good to help someone learn something;" 5 items, alpha = .81)
Achievement Test Score	Standardized Test	4	California Test of Basic Skills, total score.
Reading Comprehension	Questionnaire	6	Based on a measure developed by the Educational Testing Service. High scores indicate greater depth of comprehension and "higher-order" thinking.

Table 3
Differences in Social and Academic Outcomes by Adjustment Group, Domain, and Grade

Domain, Grade & Measure	Adjustment Group: Antisocial *M*	Antisocial *SD*	Average *M*	Average *SD*	Prosocial *M*	Prosocial *SD*
Sociomoral Attitudes and Values						
Kindergarten						
Social Desirability	5.55	(1.66)	5.03	(1.74)	5.29	(1.68)
Value on Helping[a]	1.88	(.70)	1.57	(.60)	1.72	(.64)
Acknowledge Transgressions	.95	(.68)	1.14	(.98)	1.21	(1.11)
Response to Transgressions	2.57	(.95)	2.89	(.93)	2.97	(.92)
Prosocial Reasoning[a]	2.00_{ab}	(.66)	1.84_{a}	(.55)	2.16_{b}+	(.69)
Moral Reasoning	1.81	(.62)	1.89	(.84)	1.89	(.94)
First Grade						
Empathy	1.71	(.21)	1.75	(.20)	1.77+	(.16)
Prosocial Self-Concept[a]	2.07	(.35)	2.03	(.38)	2.17*	(.39)
Social Distance: Rejected	-.72	(1.95)	-.58	(1.78)	-1.11	(1.94)
Social Distance: Negative	-4.26	(2.35)	-4.26	(2.20)	-4.73	(1.56)
Second Grade						
Social Desirability	3.37	(1.88)	3.39	(1.96)	3.50	(2.13)
Value on Helping	2.09	(.60)	2.04	(.49)	2.20	(.43)
Acknowledge Transgressions	2.29	(.80)	2.02	(.95)	2.21	(.87)
Response to Transgressions	3.29	(.67)	3.26	(.68)	3.47	(.65)
Prosocial Reasoning	2.44	(.54)	2.42	(.65)	2.52	(.54)
Moral Reasoning	2.38	(.72)	2.37	(.74)	2.51	(.74)
Third Grade						
Prosocial Self-Concept	2.17	(.35)	2.13	(.30)	2.13	(.37)
Positive Orientation to Groups	2.22	(.33)	2.40	(.40)	2.33	(.48)
Concern for Others	1.70	(.40)	1.79	(.49)	1.78	(.52)
Competitiveness[a]	1.50	(.36)	1.75	(.47)	1.53	(.42)
Self-Esteem	2.14	(.42)	2.19	(.45)	2.42+	(.35)
Empathy	1.68	(.21)	1.65	(.24)	1.70	(.23)
Perceptual "Benevolence"	1.70	(.22)	1.79	(.21)	1.70	(.23)
Democratic Values	2.86	(.48)	3.17	(.45)	3.13	(.41)
Fourth Grade						
Social Desirability	1.96	(1.24)	2.62	(1.87)	2.28	(1.42)
Value on Helping	2.53	(.37)	2.37	(.48)	2.41	(.44)
Acknowledge Transgressions	2.50	(.70)	2.59	(.64)	2.71	(.63)
Response to Transgressions	3.50	(.54)	3.51	(.50)	3.58	(.50)
Prosocial Reasoning	2.78	(.55)	2.72	(.56)	2.69	(.58)
Moral Reasoning	2.91	(.63)	3.11	(.57)	3.10	(.68)
Concern for Others[a]	1.79_{a}	(.57)	2.10_{b}	(.51)	2.15_{b}*	(.54)
Self-Esteem[a]	2.22_{a}	(.42)	2.38_{ab}	(.41)	2.56_{b}*	(.26)
Empathy[a]	1.55_{a}	(.29)	1.67_{b}	(.23)	1.71_{b}*	(.25)
Competitiveness	1.79_{b}	(.51)	1.68_{ab}	(.47)	1.55_{a}*	(.36)
Democratic Values[a]	2.93_{a}	(.42)	3.12_{ab}	(.44)	3.25_{b}*	(.42)
Intrinsic Prosocial Motivation	59.10	(14.61)	64.43	(16.11)	64.22	(17.22)

Table 3 (continued)

Domain, Grade & Measure	Antisocial *M*	Antisocial *SD*	Average *M*	Average *SD*	Prosocial *M*	Prosocial *SD*
Fifth Grade						
Concern for Others	2.30	(.36)	2.03	(.53)	2.25	(.26)
Self-Monitoring	1.65	(.14)	1.54	(.21)	1.60	(.17)
Rivalry	1.67	(.54)	1.68	(.53)	1.68	(.59)
Intrinsic Prosocial Motivation	62.55	(9.99)	57.33	(8.94)	61.05	(8.89)
Sixth Grade						
Fantasy-Empathy[a]	2.36_a	(.67)	2.94_b	(.70)	2.98_b*	(.72)
Perspective-Taking[a]	2.24_a	(.70)	2.85_b	(.49)	2.87_b*	(.67)
Empathic Concern[a]	2.66_a	(.61)	3.00_b	(.53)	3.29_b*	(.47)
Personal Distress	2.20	(.67)	2.43	(.41)	2.30	(.57)
Extrinsic Motivation: Prosocial	2.55	(.76)	2.73	(.68)	2.75	(.64)
Introjected Motivation: Prosocial[a]	2.55_a	(.68)	2.95_b	(.62)	3.05_b*	(.63)
Identified Motivation: Prosocial[a]	2.78_a	(.78)	3.21_b	(.61)	3.46_b*	(.49)
Intrinsic Prosocial Motivation[a]	55.67_a	(6.09)	58.19_{ab}	(4.90)	59.78_b*	(5.12)
Loneliness[a]	2.01_b	(.80)	1.95_b	(.69)	1.53_a*	(.51)
Social Anxiety[a]	2.58	(.76)	2.99	(.85)	2.57	(.52)
Social Skills						
Kindergarten						
Conflict Resolution	2.42	(.89)	2.35	(.78)	2.53	(.80)
Social Understanding	1.36	(.56)	1.49	(.74)	1.49	(.69)
First Grade						
Interpersonal Sensitivity	2.12	(.95)	2.19	(.73)	2.28	(.97)
Problem Resolution	3.40	(.86)	3.44	(.77)	3.59	(.94)
Obstacle Resolution	2.96	(1.07)	3.34	(1.26)	3.09	(1.05)
Means-Ends Thinking	.31	(.35)	.25	(.30)	.25	(.35)
Second Grade						
Conflict Resolution	2.11	(.66)	2.17	(.84)	2.23	(.67)
Social Understanding	2.54	(.71)	2.53	(.71)	2.60	(.69)
Third Grade						
Interpersonal Sensitivity	3.03	(.76)	2.66	(.75)	2.74	(.77)
Problem Resolution	3.81	(.67)	4.01	(.67)	4.06	(.67)
Obstacle Resolution	3.71	(1.10)	3.89	(.92)	3.99	(.97)
Means-Ends Thinking	.45	(.45)	.49	(.53)	.56	(.52)
Fourth Grade						
Conflict Resolution	2.60	(1.05)	2.64	(.96)	2.45	(.89)
Social Understanding	3.46	(.45)	3.48	(.52)	3.37	(.38)
Perceived Social Competence[a]	2.22_a	(.36)	2.42_b	(.30)	2.46_b*	(.33)
Fifth Grade						
Social Understanding	2.25	(.37)	2.09	(.37)	2.25	(.40)
Perceived Social Competence	2.25	(.23)	2.33	(.37)	2.35	(.39)
Interpersonal Behavior						
Kindergarten						
Helping Behavior[a]	1.10	(1.16)	.69	(1.04)	.89	(1.18)
Donating Behavior	.30	(.65)	.26	(.70)	.39	(.94)
Second Grade						
Donating Behavior	.16	(.38)	.47	(1.08)	.50*	(.83)
Fourth Grade						
Donating Behavior	1.30	(1.32)	1.52	(1.36)	1.53	(1.34)

Table 3 (continued)

Domain, Grade & Measure	Antisocial *M*	Antisocial *SD*	Average *M*	Average *SD*	Prosocial *M*	Prosocial *SD*
Fifth Grade						
Prosocial Behavior[a]	18.03_a	(7.73)	22.06_a	(12.17)	32.69_b*	(14.57)
Negative Behavior[a]	46.01_b	(19.84)	34.74_{ab}	(17.01)	28.36_a*	(11.32)
Competitive Behavior	13.63	(9.51)	14.15	(12.39)	16.31	(11.66)
Assertive Behavior	24.57	(8.61)	21.15	(9.52)	30.40	(9.68)
Withdrawn Behavior	15.51	(11.56)	8.94	(10.27)	9.27	(9.53)
Peer Acceptance						
Third Grade						
Nominations Received	19.05	(12.02)	23.71	(13.07)	29.26*	(13.39)
Roles Nominated For	3.92	(1.54)	4.16	(1.28)	4.51*	(.82)
Reciprocated Nominations	51.88	(33.68)	52.20	(29.58)	54.69	(22.48)
Fifth Grade						
Friendship Nominations Received	11.80	(8.77)	18.56	(9.15)	20.72*	(8.23)
Friendship Nominations Made	17.60	(9.47)	17.49	(9.92)	14.85	(4.40)
Reciprocated Nominations	42.13	(29.92)	61.22	(35.56)	62.29*	(26.17)
Perceived Popularity	2.33	(.37)	2.49	(.46)	2.64	(.27)
School-Related Attitudes, Values and Achievement						
Third Grade						
Enjoy Helping Other's Learn[a]	2.77_b	(.41)	2.43_a	(.51)	2.76_b	(.40)
Fourth Grade						
Enjoy Helping Other's Learn[a]	2.51_a	(.47)	2.64_{ab}	(.39)	2.73_b*	(.35)
Liking for School[a]	1.74_a	(.52)	1.89_{ab}	(.45)	1.96_b*	(.39)
Achievement Motivation[a]	1.42_a	(.21)	1.54_b	(.18)	1.55_b*	(.15)
Achievement Test Score[a]	713.96_a	(20.04)	725.78_b	(24.45)	734.61_b*	(30.32)
Fifth Grade						
Enjoy Helping Other's Learn	2.50	(.49)	2.51	(.45)	2.67	(.36)
Liking for School	1.55	(.39)	1.63	(.45)	1.76+	(.41)
Intrinsic Academic Motivation	57.19	(7.06)	55.59	(5.61)	52.65	(7.88)
Sixth Grade						
Liking for School[a]	1.58_a	(.44)	1.82_a	(.43)	2.10_b*	(.51)
Extrinsic Motivation: Academic	2.73	(.62)	2.61	(.70)	2.65	(.73)
Introjected Motivation: Academic[a]	2.52_a	(.63)	2.79_{ab}	(.51)	3.06_b*	(.59)
Identified Motivation: Academic[a]	2.77_a	(.65)	3.11_b	(.59)	3.50_c*	(.47)
Intrinsic Academic Motivation[a]	51.31_a	(7.36)	54.03_{ab}	(5.78)	56.94_b*	(6.46)
Reading Comprehension	47.39		48.75		49.90	

Note. Within-year sample sizes range from 40 to 180. Means that do not share a subscript differ at $p < .05$, Duncan's Multiple Range Test. Post-hoc comparisons conducted using the harmonic mean of the group sizes.

[a]Main effect for adjustment group significant at $p < .05$.

+A priori Antisocial vs. Prosicoal contrast significant at $p < .10$.

*A priori Antisocial vs. Prosocial contrast significant at $p < .05$.

Table 4
Relationships Between Social Attitudes, Values, and Behavior and Changes in Adjustment from Early to Middle Elementary Grades

Domain, Grade & Measure	Girls		Boys	
	Corr.	Beta	Corr.	Beta
Sociomoral Attitudes and Values				
Kindergarten				
Social Desirability	.29*	.22**	-.10	
Value on Helping	.05		-.01	
Acknowledge Transgressions	-.05		.04	
Response to Transgressions	-.47**	-.23**	-.20	
Prosocial Reasoning	.09		-.30*	
Moral Reasoning	-.24+		-.19	-.15+
First Grade				
Empathy	.18+	.15+	.11	
Prosocial Self-Concept	.06	-.20*	-.18+	-.12+
Social Distance: Rejected	.23+		-.20	-.22**
Social Distance: Negative	-.03		.24*	
Second Grade				
Social Desirability	-.09	-.20*	.13	.26***
Value on Helping	-.01	.14+	.06	
Acknowledge Transgressions	-.01		-.10	
Response to Transgressions	.08		.02	
Prosocial Reasoning	-.03		-.14	
Moral Reasoning	-.06		.04	
Third Grade				
Prosocial Self-Concept	.06		-.14	
Positive Orientation to Groups	.02		.02	
Concern for Others	.17		.14	
Competitiveness	.22	.27*	.00	.18*
Self-Esteem	-.17		.01	
Empathy	.08	.28**	.10	
Perceptual "Benevolence"	.15		.08	
Democratic Values	.25+		-.11	
Multiple R		.56***		.37**
Total R^2		.31		.14
Social Skills				
Kindergarten				
Conflict Resolution	-.08		.22+	.27**
Social Understanding	.19+		-.25*	
First Grade				
Interpersonal Sensitivity	-.08		.10	
Problem Resolution	.07		.09	
Obstacle Resolution	.13		-.19+	
Means-Ends Thinking	.22+		.16	
Second Grade				
Conflict Resolution	.41**	.25**	-.06	
Social Understanding	.03		-.22*	-.18*

Table 4 (continued)

Domain, Grade & Measure	Girls		Boys	
	Corr.	Beta	Corr.	Beta
Third Grade				
Interpersonal Sensitivity	-.16		.19^{+}	
Problem Resolution	.01		.08	
Obstacle Resolution	-.11		-.16^{+}	-.21**
Means-Ends Thinking	-.10		.29*	.23**
Multiple R		.61***		.55***
Unique R^2		.06		.16***
Total R^2		.37		.30
Interpersonal Behavior				
Kindergarten				
Helping Behavior	.07		-.20^{+}	-.22**
Donating Behavior	.20^{+}		.08	
Second Grade				
Donating Behavior	.12		.22*	
Multiple R		.61***		.58***
Unique R^2		.01		.04**
Total R^2		.37		.34
Peer Acceptance				
Third Grade				
Nominations Received	-.01		.09	
Roles Nominated For	-.09		-.17^{+}	
Reciprocated Nominations	-.04		-.07	
Multiple R		.61***		.58***
Unique R^2		.01		.01
Total R^2		.38		.34

Note. Betas are shown only for variables that were statistically significant ($p < .10$) predictors of change in adjustment in multiple regression analyses.

$^{+}p < .10$

$^{*}p < .05$

$^{**}p < .01$

Figure 1. Adjustment Group Differences in Empathy

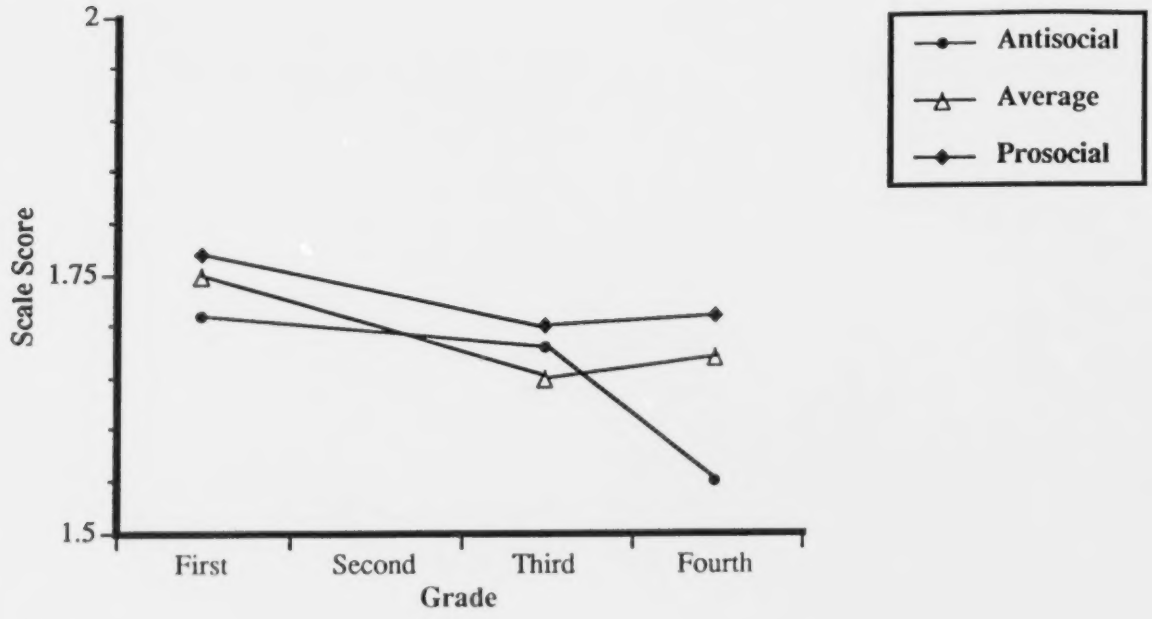

Figure 2. Adjustment Group Differences in Commitment to Democratic Values

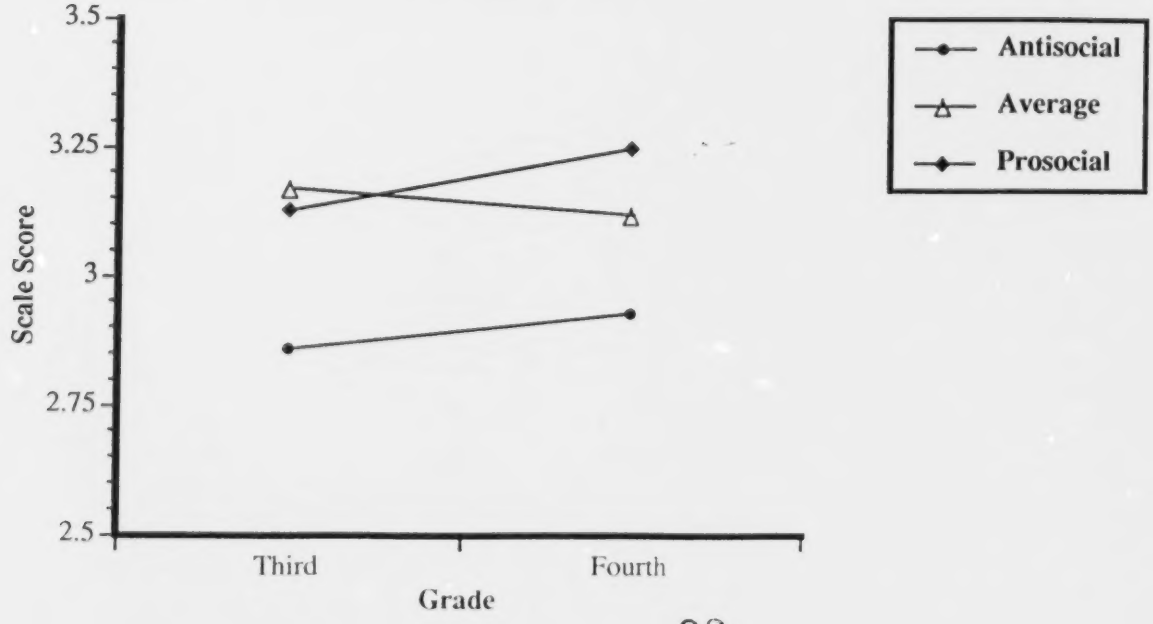

Figure 3. Adjustment Group Differences in Peer Acceptance

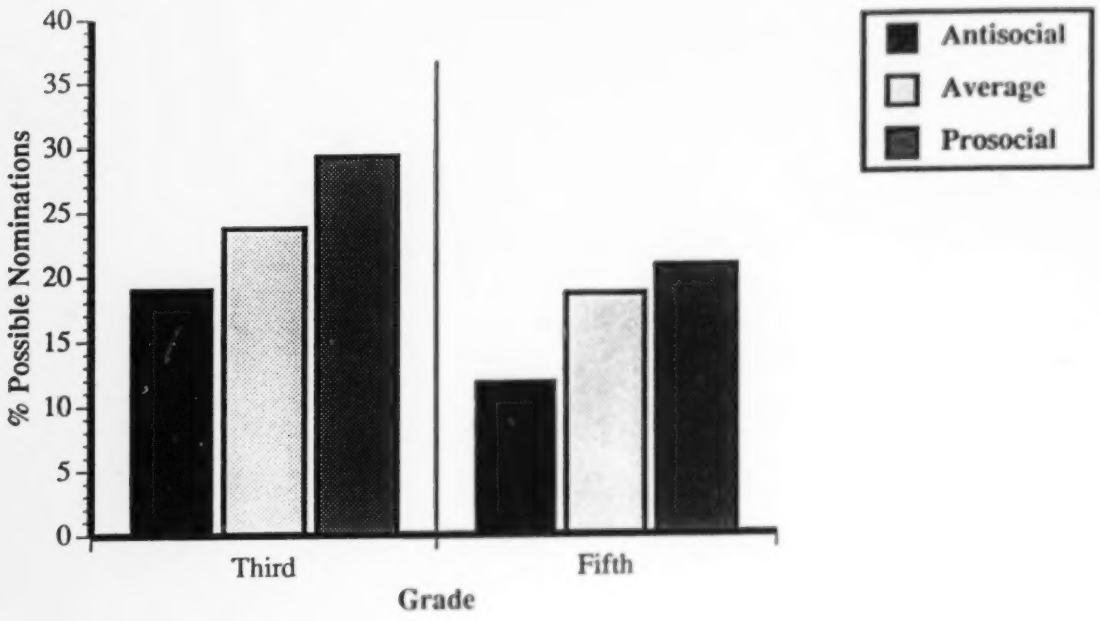

Figure 4. Adjustment Group Differences in Loneliness/Social Dissatisfaction

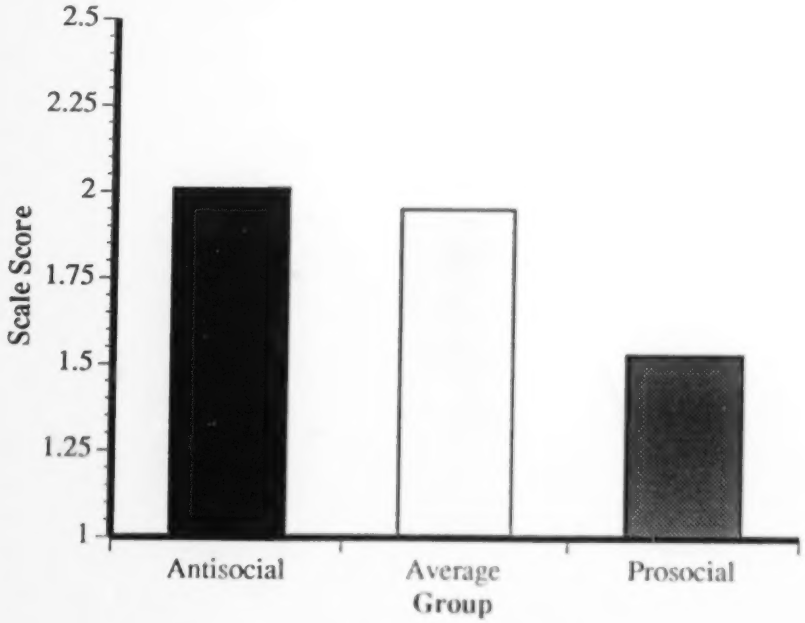

Figure 5. Adjustment Group Differences in Liking for School

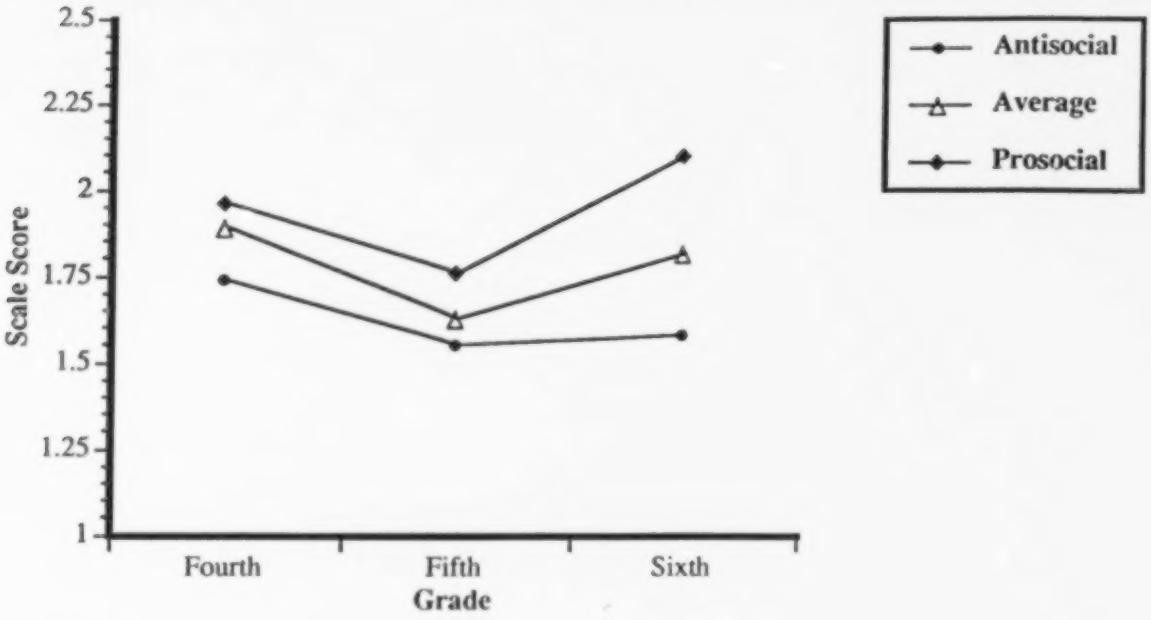

Figure 6. Adjustment Group Differences in Academic Achievement

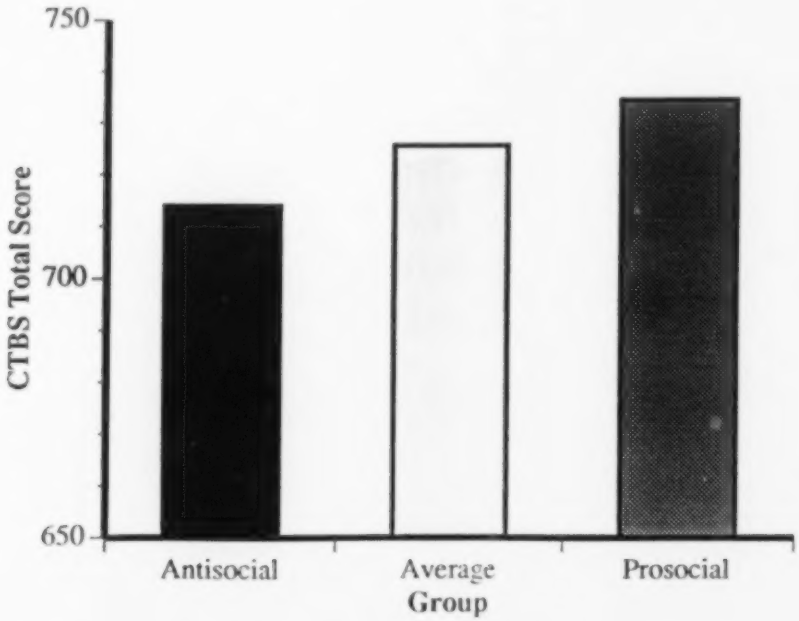

Figure 7. Change in Adjustment from Early to Middle Elementary Grades by Adjustment Group and Sex